United States Patent [19]

Seidler

[11] **4,366,915**

[45] **Jan. 4, 1983**

[54] **HINGED LID CONTAINER**

[75] Inventor: **David Seidler,** Forest Hills, N.Y.

[73] Assignee: **Revlon Inc.,** Tuckahoe, N.Y.

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[51] **Int. Cl.**[3] **B65D 43/14;** B65D 51/04

[52] **U.S. Cl.** **220/339;** 220/306; 206/1.5

[58] **Field of Search** 220/334, 339, 306; 206/387, 1.5

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Primary Examiner—George T. Hall
Attorney, Agent, or Firm—Blum, Kaplan, Friedman, Silberman and Beran

[57] **ABSTRACT**

A plastic lid having a hinge formed in a planar panel is connected to a container body without use of hardware. An integral lid catch using no hardware, engages in the container body to close the container. Containers comprise two or three pieces.

28 Claims, 13 Drawing Figures

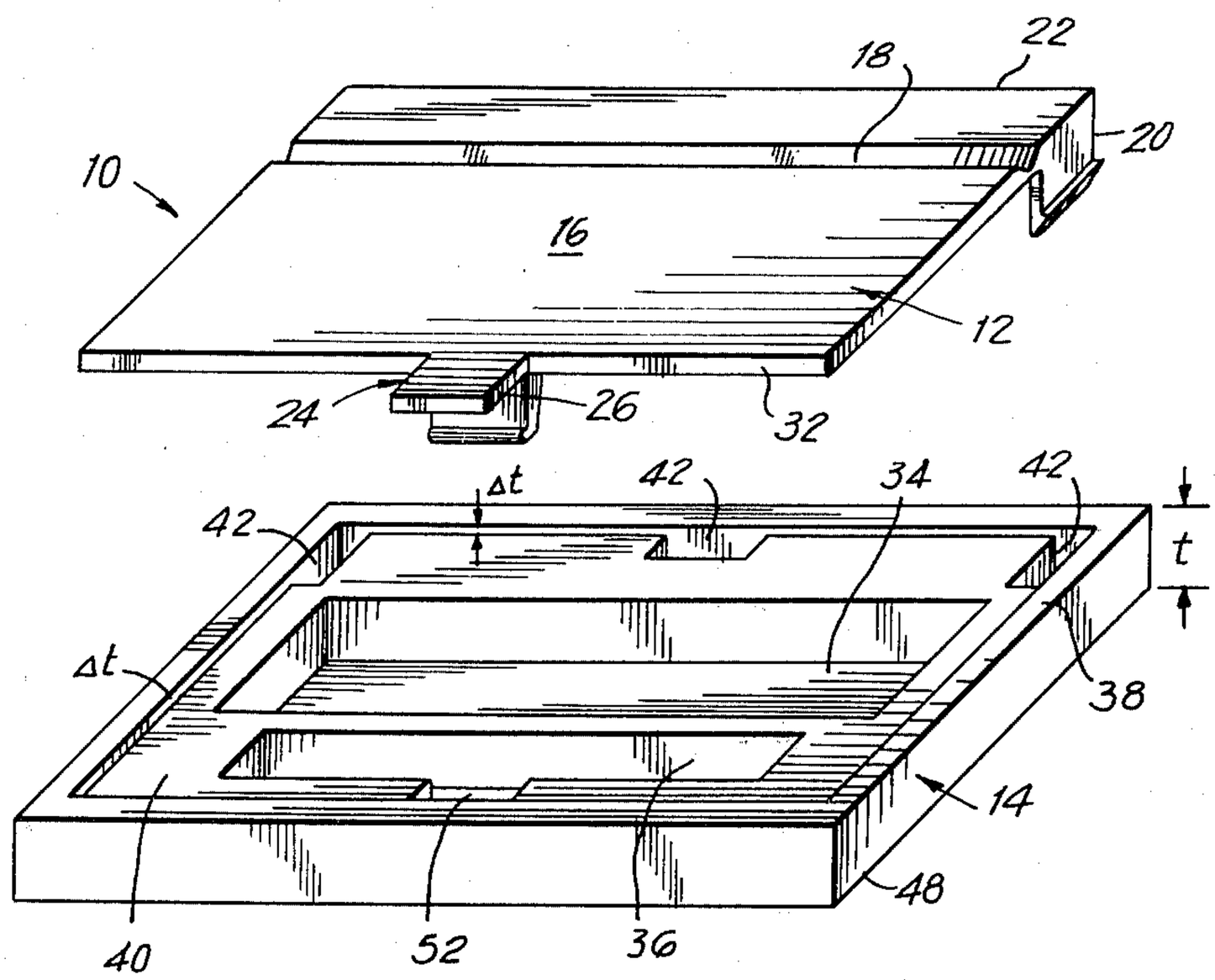


FIG. 1

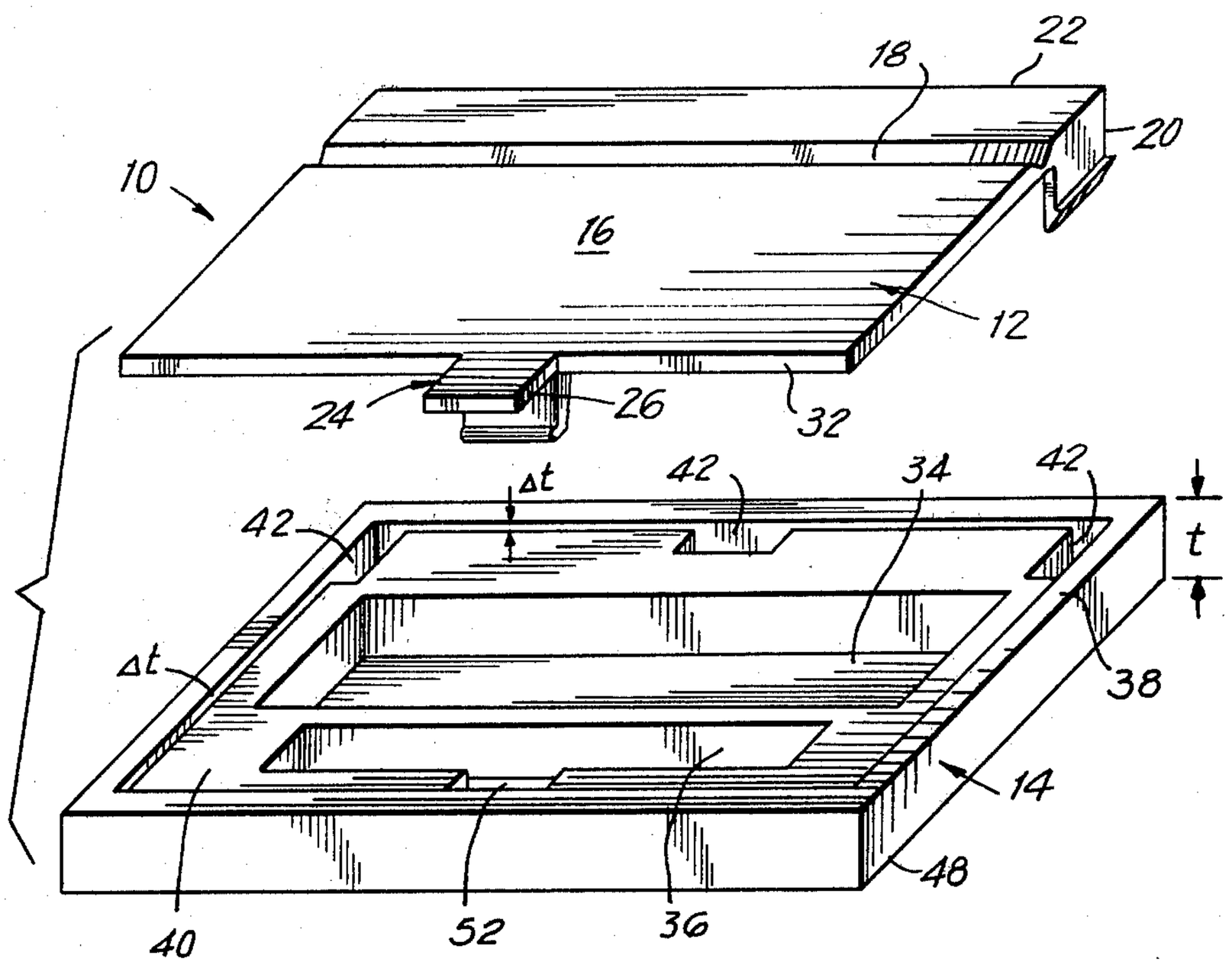
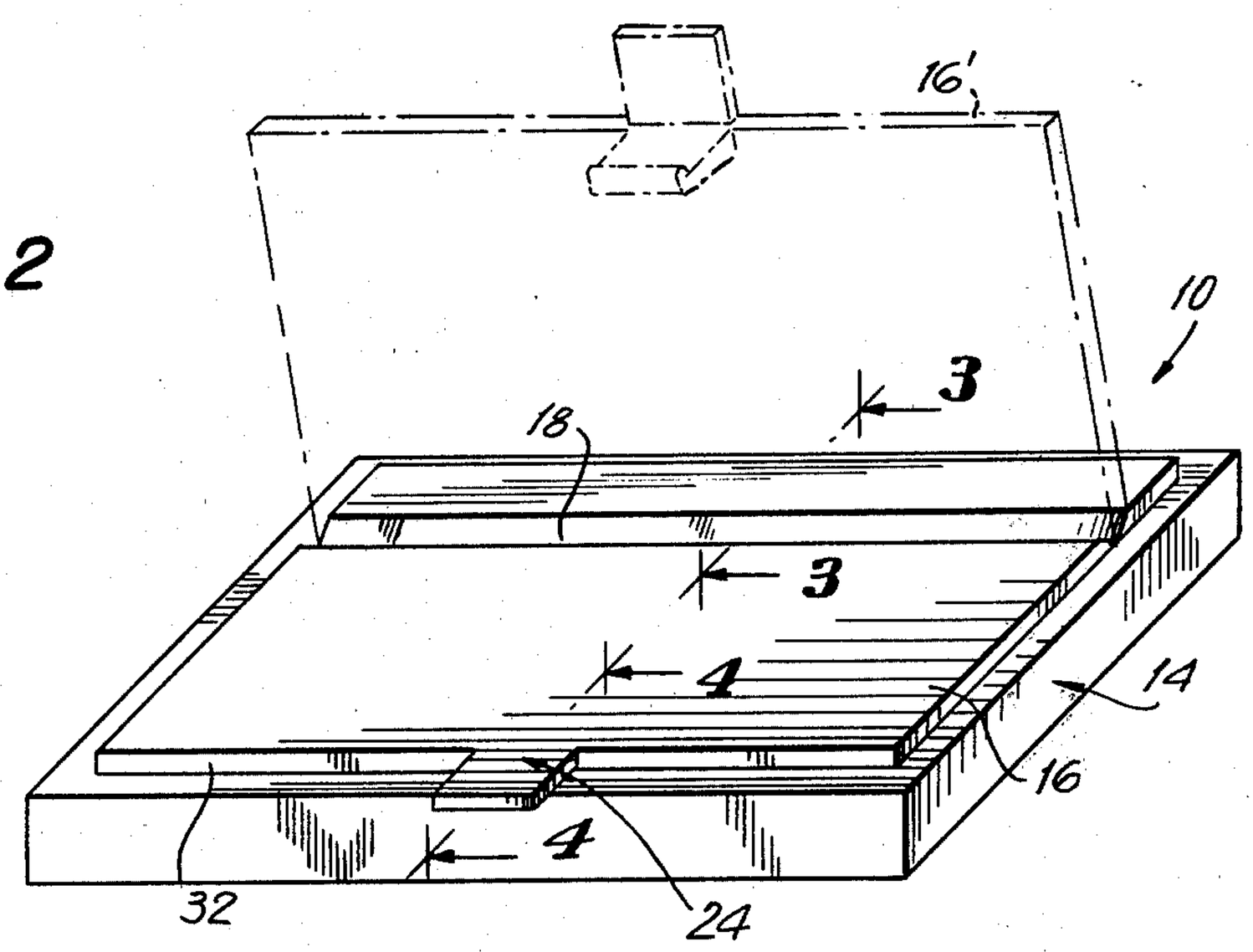


FIG. 2



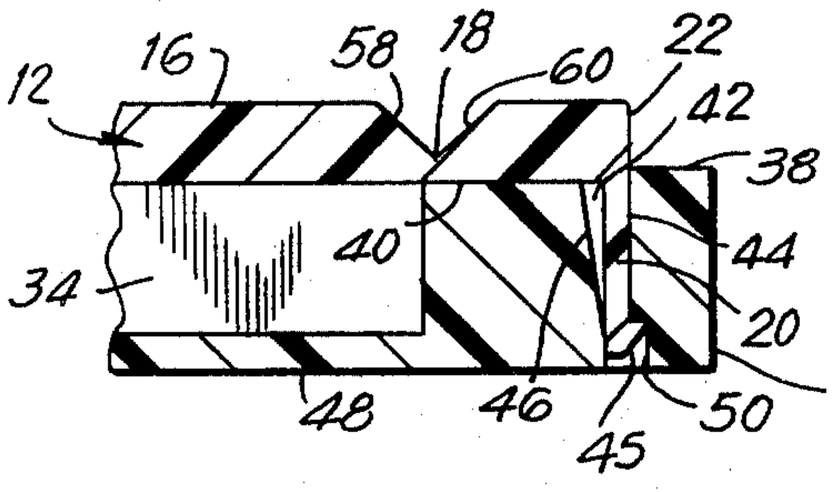


FIG. 3

FIG. 4

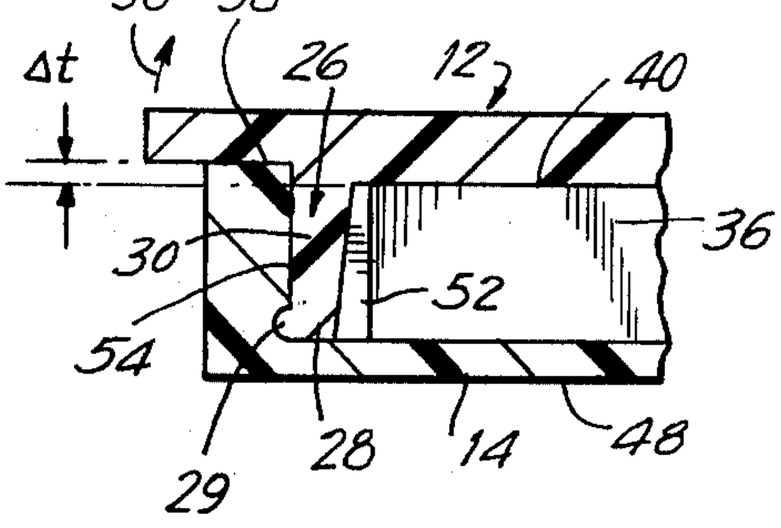


FIG. 5

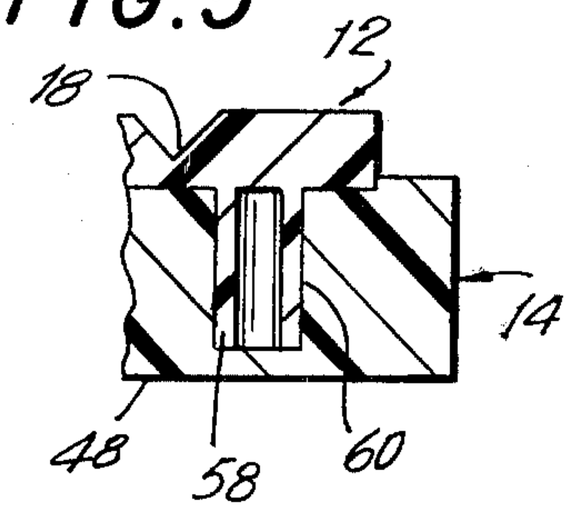


FIG. 6

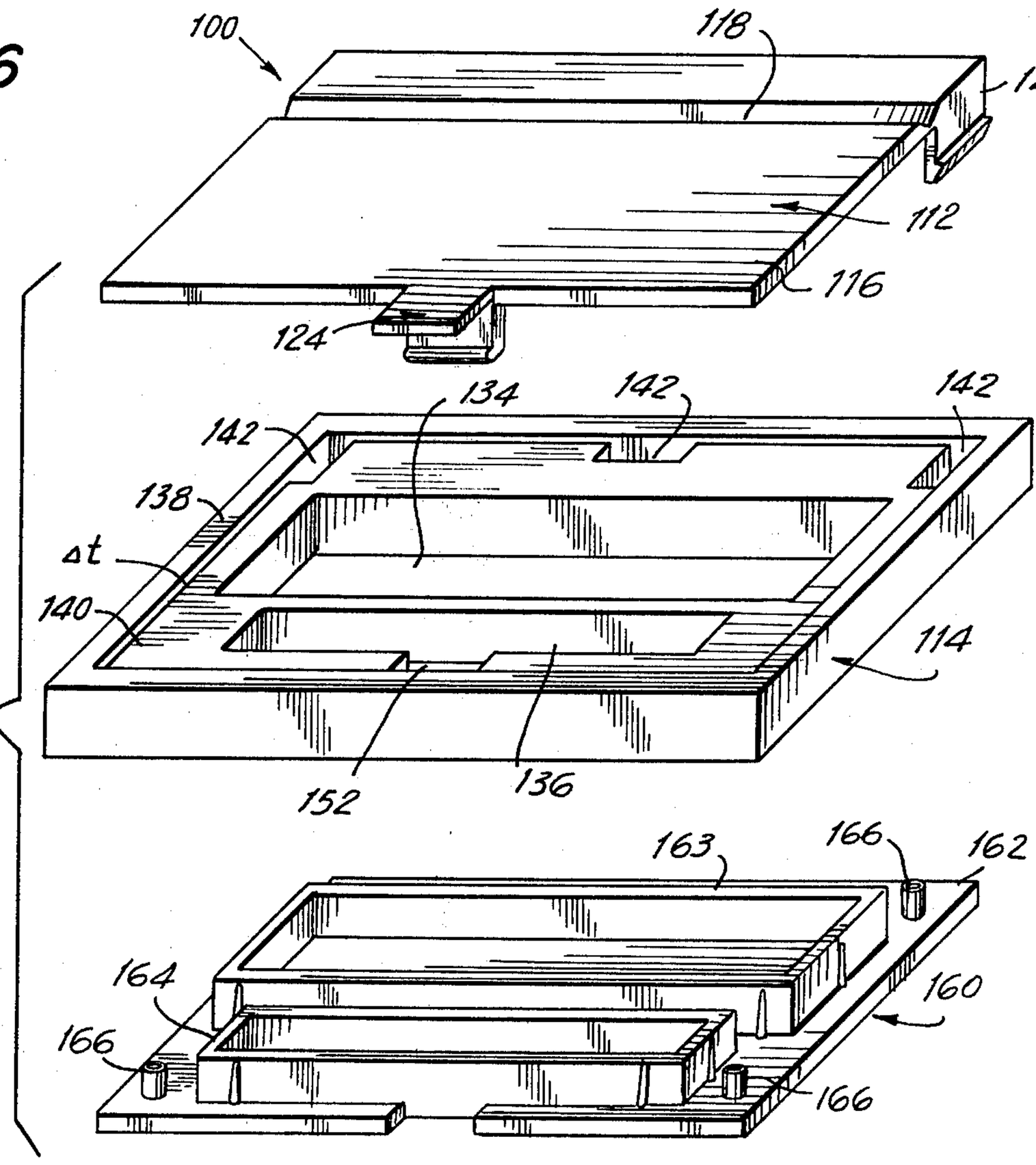


FIG. 7

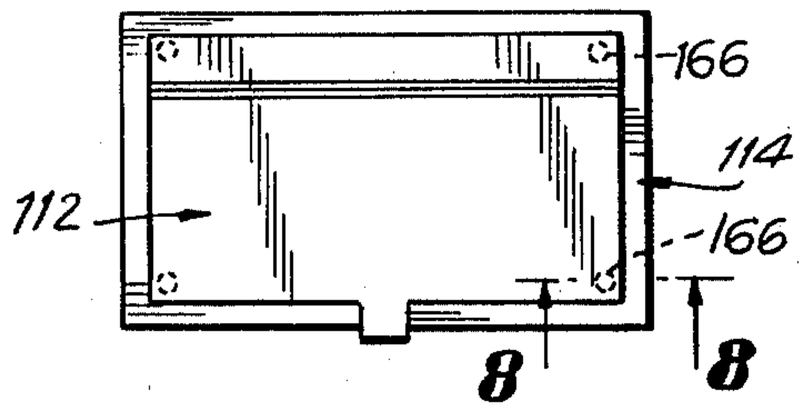


FIG. 8

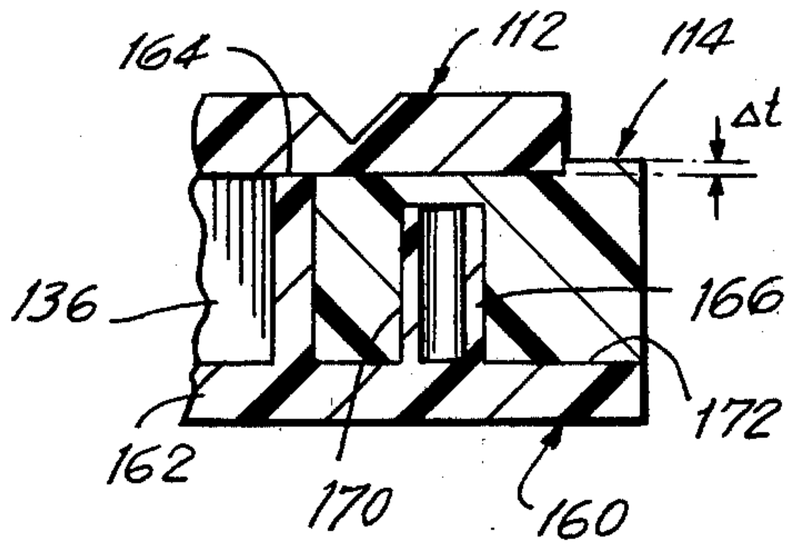


FIG. 9

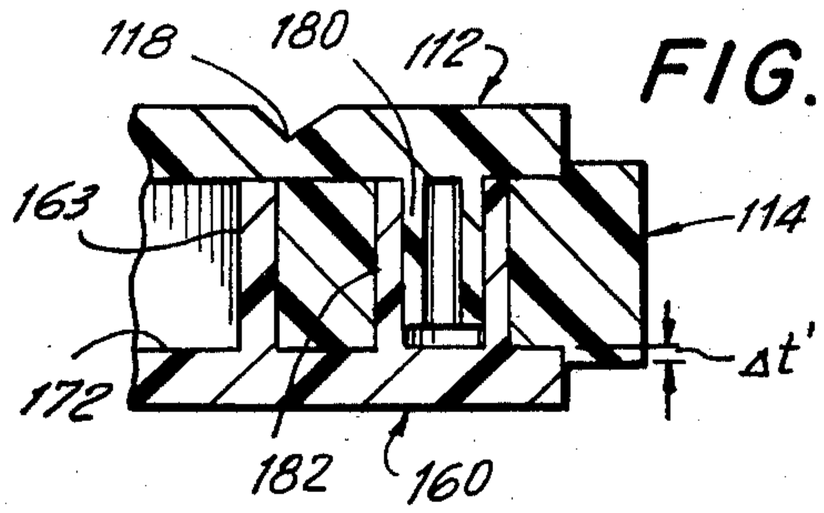


FIG. 10

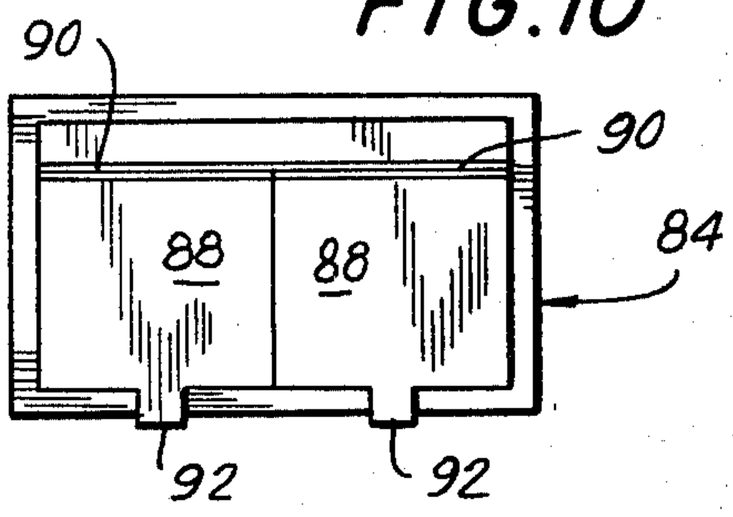


FIG. 11

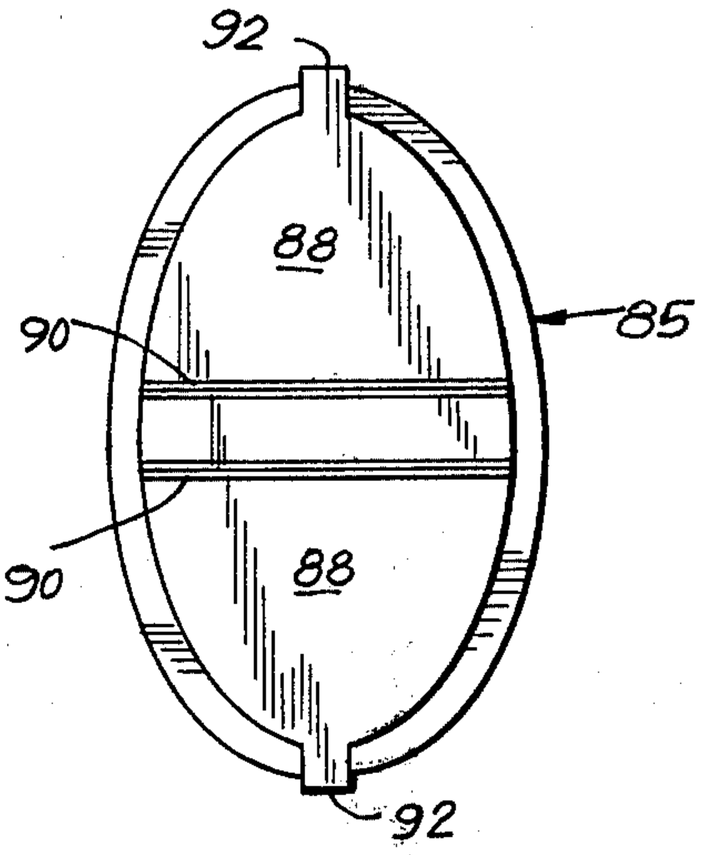


FIG. 12

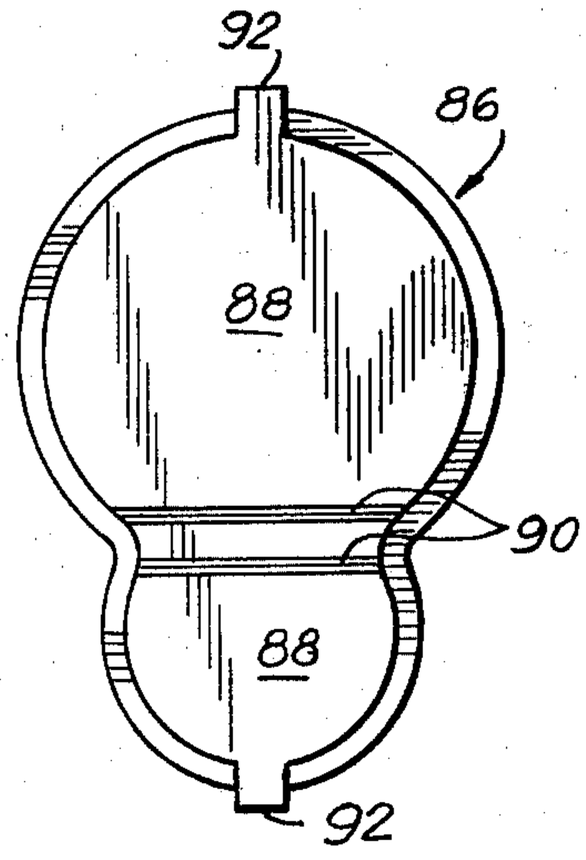
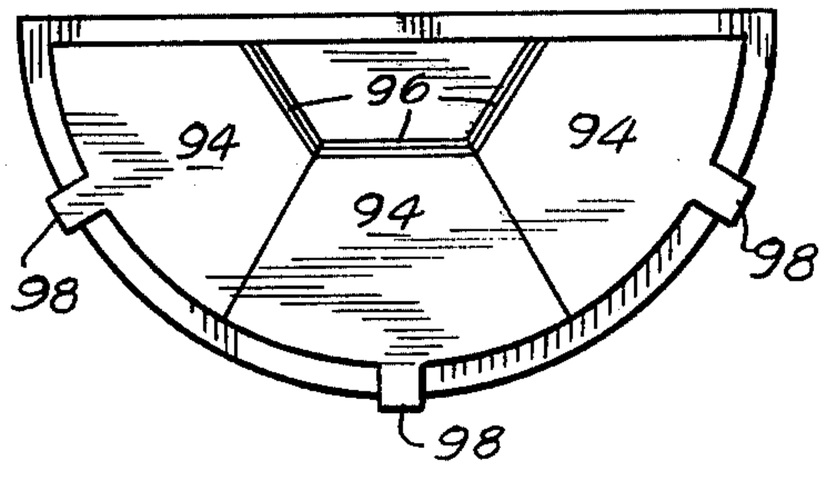


FIG. 13



HINGED LID CONTAINER

BACKGROUND OF THE INVENTION

This invention relates generally to a hinged lid container and more particularly to a hinged lid container wherein the hinge is formed in a planar surface of a plastic lid and connection to a container body is accomplished without use of hardware. Containers, for example, cosmetic compacts, which use pin hinges or snap hinges for the covers are expensive to produce both in tooling and in production. Precise tolerances are generally required which limits the materials for the container, the shape of the finished products and the methods of manufacturing. Materials which do not readily conform to close tolerances, for example, wood, glass and extruded products are costly to use and accordingly by-passed in designing such articles. Pin hinges on lids and snap hinges require time consuming effort for assembly and alignment.

What is needed is a hinged lid container which is inexpensive to produce and assemble and can be made with relatively low precision without marring the appearance or performance of the finished product.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a hinged lid container especially suitable for manufacturing to low tolerances and from inexpensive materials is provided. A plastic lid having a hinge formed in a planar panel is connected to a container body without use of hardware. An integral lid catch using no hardware engages the container body to close the container. Recessing the lid into the container body eliminates gaps due to lid warpage. The container including the hinged lid may be of two or three piece construction.

Accordingly, it is an object of this invention to provide an improved hinged lid container having a construction which requires little precision in manufacture but maintains an attractive appearance.

Another object of this invention is to provide an improved hinged lid container having a hinge formed within a planar lid.

A further object of this invention is to provide an improved hinged lid container assembled and operable without the use of hardware.

Still another object of this invention is to provide an improved hinged lid container with a catch having an interference or friction fit with the container body.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. **1** is an exploded top perspective view of a hinged lid and container body in accordance with this invention;

FIG. **2** is a top perspective view of the lid and body of FIG. **1** in an assembled condition;

FIG. **3** is a partial sectional view in elevation taken along the line **3—3** of FIG. **2**;

FIG. **4** is a partial sectional view in elevation taken along the line **4—4** of FIG. **2**;

FIG. **5** is a partial sectional view of an alternative embodiment of hinged lid and container body in accordance with this invention;

FIG. **6** is a top perspective exploded view of a three-piece container using the hinged lid in accordance with this invention;

FIG. **7** is top view to a smaller scale of the container of FIG. **6**;

FIG. **8** is partial sectional view in elevation taken along the line **8—8** of FIG. **7**;

FIG. **9** is partial sectional view in elevation of a connection of container base to container lid in accordance with this invention; and

FIGS. **10–13** are top views of multi-lidded containers in accordance with this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the FIGS. **1–4**, a hinged lid container **10** in accordance with this invention includes a hinged lid **12** and container body **14**. The hinged lid **12** is comprised of a planar lid **16** having a hinge **18** extending laterally between the sides of the lid **12**. Three hooked shaped tabs **20** (two tabs not shown) extend transversely from the planar surface at the sides and center of the rear plate **22** of the planar lid **16**. As best seen in FIG. **3**, the hook portion at the lower end of the tab **20** is an extension beyond the rear plate **22** of the planar lid **16**.

The hinged lid **12** also includes a catch **24** having a tab **26** which is a central extension of the planar lid **16**. As best seen in FIG. **4** a snap **28** is a rounded frontwardly extending protrusion **29** on a tapered flange **30** extending downward from the front edge **32** of the lid **16**.

The container body **14** is rectilinear in shape and has, for the sake of an example, two interior compartments **34,36** suitable for holding materials, for example, in a small size the compartment **34** may hold cosmetics while the compartment **36** holds a brush applicator for use with the cosmetic product. The body **14** has a rectilinear frame-type border **38** which has a planar upper surface and a height t which represents the full depth of the body **14**. A second planar surface **40** is recessed below the frame border **38** by an amount Δt as best seen in FIG. **4**. Recesses **42** are formed into the second planar surface **40** adjacent to the border **38**. Each recess **42** has a perpendicular rear surface **44** and sloping surface **46** such that the recess **42** becomes narrower toward the base **48** of the body **14**. The rear wall **44** of the recess **42** has an offset perpendicular surface **50** proximate the base **48** and the portion of the forward recess surface **46** opposing the offset surface **50** is perpendicular to the base **48**.

Accordingly, when the hooked shaped tabs **20** of the hinged lid **12** are inserted into the recesses **42**, the hooked ends are wedged between the offset surface **50** in the recess and the perpendicular portion at the bottom of the surface **46**. Sloping surfaces **45** of the tabs **20** and recesses **42** are in registry, whereby the lid **12**, once having its tabs **20** fully inserted in the recesses **42** is not readily removeable.

A recess **52** is provided in the second planar surface **40** adjacent the border **38** at the front of the body **14** to

receive therein the snap **28** with the rounded protrusion **29** of the catch tab **26**. As seen in FIG. **4**, the tab **26** engages only the forward surface **54** of the recess **52** which is contoured to mate with the forward surface of the tab **26**. The hinged lid **12** is made of semi-rigid material whereby, when a force is applied in the direction indicated by the arrow **56**, the rounded protrusion **29** of the tab **26** readily slides around the contours of the forward surface **54** of the recess **52**. Thus, the catch is simply disengaged from the body **14**. The broken lines of FIG. **2** indicate the hinged lid container **10** in accordance with this invention in an open condition.

The base **48** of the container body **14** is continuous such that the compartments **34, 36** include bottoms and the two pieces, namely, the hinged lid **12** and container body **14** comprise the entire construction.

The body **14** is fabricated of rigid material, for example, plastic, glass, metal, wood and electroplated materials formed by any of a variety of methods. For example, the body **14** can be formed by injection molding, extrusion, machining, casting and pressing. Relatively inexpensive tooling is needed for production.

The hinged lid **12** is made of plastic which is semi-rigid but is relatively bendable at the hinge **18** which is in the form of a V-groove substantially reducing the thickness of the planar cover **16** at the line of bending. The intersecting surfaces **58,60** of the hinge groove meet at right angles such that the lid can be raised to a substantially perpendicular position relative to the body **14**. As stated above, the broken lines of FIG. **2** show the lid in an open condition as indicated with the reference numeral **16'**. The hinge **18**, known in the art as a living hinge, has a long life under repeated bending. Polypropylene is a material which has given good results in fabricating a lid **12** including a living hinge **18**.

It will be apparent that it is not necessary to have a separated surface **40** recessed by a distance Δt from the planar border **38**. Further, the planar lid **16** may have rectilinear dimensions similar to the body whereby the border **38** is not visible in a top view. In an alternative embodiment, the tabs **20** can extend along the entire rear plate **22** of the hinged lid **12** and the central recess **42** may be elongated proportionately.

FIG. **5** shows an alternative attachment for the hinged lid **12** to the body **14**. Circular pins **58** integral with the hinged lid **12** extend into mating holes **60** in the container body **14** with a force fit such that the lid **12** is joined to the body **14** and cannot be removed except by the application of a force greater than that usually applied in use of the container. The rounded pins **58** may be solid or hollow; a hollow pin is illustrated in FIG. **5**.

In the embodiments of FIGS. **1–4** and FIG. **5**, the hinged lid **12** and the container body **14** are each integral components requiring no hardware or sub-assembly, although it should be readily understood, that these parts may also be fabricated from a plurality of components. However, the economy of production is reduced by such manufacturing techniques. The assembled hinged lid container **10** requires no hardware to produce a functioning entity.

FIG. **6** illustrates a three-component hinged lid container **100** in accordance with this invention. In this exemplary embodiment, a hinged lid **112** is similar to the lid **12** of FIG. **1** and includes a living hinge **118** and a plurality of tabs **120** for engagement in body recesses **142**. The lid **116** is planar with the hinge **118** cut into the planar upper surface. A catch **124** has the same construction as the catch **24** of FIG. **1** and engages a tab recess **152** in the body **114** as in the previously described embodiments. The container body **114** includes a border **138** and second planar surface **140** recessed by a distance Δt. A pair of interior compartments **134, 136** are provided for receiving the contents of the container therein. However, contrary to the body **14** of FIG. **1**, the compartments **134, 136** of the embodiments of FIG. **6** have no closed bottom surfaces.

In a top view (FIG. **7**) the containers of FIGS. **1** and **6** appear to be identical. However, a bottom for the compartments **134, 136** is provided by a base **160** which has a generally planar bottom piece **162** and narrow rectilinear frames **163, 164** elevated above the bottom piece **162** and integral therewith. The external dimensions of the frames **163, 164** correspond to the internal dimensions of the compartments **134, 136** respectively. Thus, as described more fully hereinafter, when the container body **114** rests upon the base **160**, the frames **163, 164** register with the compartment openings **134, 136** and enter therein. Hollow posts **166** extend from the bottom piece **162** and engage holes **170** in the bottom surface **172** of the container body **114** with a press fit. Thus, a firm integral construction is formed of the two components. As seen in FIGS. **6** and **7**, posts **166** are located at the four corners of the base **160**. In other respects the embodiment of FIGS. **6–8** are similar to the embodiment of FIGS. **1–5**.

As stated above, the hinged lid engages in the recesses **142** in the container body **114**. However, as illustrated in FIG. **9**, the hinged lid **112** can be joined to the base **160** rather than to the container body **114**. A hollow post **180** on the hinged lid **112** is press fitted into a hollow receiver **182** raised above the bottom surface **172** of the base **160**. The container body **114** is sandwiched between the hinged lid **112** and the base **160**. Such a construction is especially suitable when the body **114** is fabricated of materials or by methods which result in a low tolerance fit. For example, plastic, glass, metal, wood and electroplated materials may be used, formed by any of a variety of methods such as injection molding, extrusion, machining, casting and pressing. Thus, relatively inexpensive tooling is needed for production of the body **114** having wide dimensional tolerances.

It should be noted in FIG. **9** that an offset $\Delta t'$ between the base surface **172** and body **114** adjacent to the connection between the lid **112** and base **160** assures proper positioning of the container body **114**.

A hooked tab construction as shown in FIG. **3** can also be used in an assembly similar to FIG. **9** wherein the tab **20** on the lid engages in a recess formed in the base **160** similar to the recess **42** of FIG. **3**.

FIGS. **10–13** show hinged lid containers **84, 85, 86** respectively having a plurality of hinged lids **88** including living hinges **90** and catch tabs **92**. FIG. **10** illustrates a rectangular arrangement with side-by-side compartments and colinear living hinges **90**. FIGS. **11** and **12** illustrate parallel hinges **90** such that the lids open in opposite directions in a back-to-back arrangment of compartments. FIG. **13** illustrates a container having three compartments and three hinged lids **94**, each lid having a living hinge **96** and a catch tab **98**. The lids are arranged in a fan-shaped pattern. As will be apparent from FIGS. **10–13**, the variety of shapes to which the hinge lid in accordance with this invention may be adapted is virtually unlimited. Regardless of shape the attachments between the lids and the bodies or the lids and the bases is as described above.

It should be apparent, that recessing of the surface **40** by a distance Δt in FIG. **1** is not a necessary requirement of all embodiments. The recess Δt does allow for some warpage in the hinged planar lid **16** without marring the appearance of the finished product. Also, with reference to FIG. **6**, it is not necessary that the base **160** include the frames **163,164** which nest within the openings of the compartments **134,136** of the body **114**. However, in a multi-compartmented container as illustrated, the frames **163,164** prevent cross-flow of stored material between the compartments **134,136**. Out leakage at the interface between the container body and base is also prevented.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A hinged lid container comprising:

a lid including a hinge;

a container body, said container body including at least one body surface required to be selectively covered or uncovered;

means for joining said lid to said container body, said joining means including at least one tab extending from a portion of said lid on one side of said hinge, and at least one recess in said container body having offset means for engaging said tab therein, and being adapted to position said lid in registry with said at least one body surface, selective operation of said hinge causing said body surface to be covered or uncovered by said lid.

2. A hinged lid container as claimed in claim **1**, wherein said lid includes a planar surface and said hinge extends in a straight hinge line across said at least a portion of said planar surface, said hinge comprising a reduction in thickness of said lid.

3. A hinged lid container as claimed in claim **2**, wherein said reduction of thickness is formed inwardly from said planar surface.

4. A hinged lid container as claimed in claim **3**, wherein said planar surface of said lid is on the exterior of said joined container.

5. A hinged lid container as claimed in claim **4**, wherein said reduction of thickness is a V-shaped indentation.

6. A hinged lid container as claimed in claim **5**, wherein said V-shaped indentation forms equal angles with said planar surface whereby said hinge can bend only 90° at said hinge line.

7. A hinged lid container as claimed in claim **6**, wherein said at least one body surface has a compartment formed therein.

8. A hinged lid container as claimed in claim **3, 4** or **7**, wherein said at least one container body surface is planar and a surface of said lid opposite to said exterior planar lid surface is also planar.

9. A hinged lid container as claimed in claim **8**, wherein said opposed planar lid surfaces are parallel.

10. A hinged lid container comprising:

a lid including a hinge;

a container body, said container body including at least one body surface required to be selectively covered or uncovered;

means for joining said lid to said container body including at least a post extending from a portion of said lid on one side of said hinge and at least one socket in said container body, said at least a post engaging said at least one socket with a press fit, whereby a substantially irreversible connection is made between said lid and said body, and being adapted to position said lid in registry with said at least one body surface, selective operation of said hinge causing said body surface to be covered or uncovered by said lid.

11. A hinged lid container as claimed in claim **1, 3, 4, 7** or **10**, and further comprising a catch tab integral with said lid on the other side of said hinge line, said catch tab extending from said lid;

and a receiver in said container body, said catch tab entering and being removably engaged in said receiver when said at least one body surface is covered.

12. A hinged lid container as claimed in claim **11**, wherein said tab includes a protrusion, said protrusion registering with a recess in said receiver to provide said engagement.

13. A hinged lid container, comprising:

a lid including a hinge;

a container body, said container body including at least one body surface required to be selectively covered or uncovered;

a base, said base positioned on the opposite side of said container body from said lid;

means for joining said lid to said base, said body being sandwiched between said lid and said base, said joining means being adapted to position said lid in registry with said at least one body surface, selective operation of said hinge causing said at least one body surfaces to be covered or uncovered by said lid.

14. A hinged lid container as claimed in claim **13**, wherein said lid includes a planar surface and said hinge extends in a straight hinge line across said at least a portion of said planar surface, said hinge comprising a reduction in thickness of said lid.

15. A hinged lid container as claimed in claim **14**, wherein said reduction of thickness is formed inwardly from said planar surface.

16. A hinged lid container as claimed in claim **15**, wherein said planar surface of said lid is on the exterior of said joined container.

17. A hinged lid container as claimed in claim **16**, wherein said reduction of thickness is a V-shaped indentation.

18. A hinged lid container as claimed in claim **17**, wherein said V-shaped indentation forms equal angles with said planar surface whereby said hinge can bend 90° at said hinge line.

19. A hinged lid container as claimed in claim **18**, wherein said at least one body surface has a compartment formed therein.

20. A hinged lid container as claimed in claims **15, 16** or **19**, wherein said means for joining includes at least one hooked tab extending from a portion of said lid on

one side of said hinge line, and at least one recess in said base having offset means for engaging said hooked tab therein.

21. A hinged lid container as claimed in claims **15**, **16** or **19**, wherein said means for joining said lid to said base includes at least one post extending from a portion of said lid on one side of said hinge line and at least one socket in said base, said at least one post engaging said at least one socket with a press fit whereby a substantially irreversible connection is made between said lid and said case.

22. A hinged lid container as claimed in claim **20**, and further comprising a catch tab integral with said lid on the other side of said hinge line, said catch tab extending from said lid;

and a receiver in said container body, said catch tab entering and being engaged in said receiver when said at least one body surface is covered.

23. A hinged lid container as claimed in claim **22**, wherein said tab includes a protrusion, said protrusion registering with a recess in said receiver to provide said engagement.

24. A hinged lid container as claimed in claim **1**, **10** or **18** and further comprising at least one additional lid, said container body including at least one additional body surface required to be selectively covered or uncovered, each said additional lid being positioned for registry with one said additional body surface.

25. A hinged lid container as claimed in claim **21**, wherein said body is constructed of a material selected from the group of materials including plastic, glass, metal, wood and electroplated elements with wide dimensional tolerance.

26. A hinged lid container as claimed in claim **23**, wherein the fit between said body and said base and lid is of wide dimensional tolerance.

27. A hinged lid container as claimed in claim **1** or **10**, wherein the fit between said body and lid is of wide dimensional tolerance.

28. A hinged lid container as claimed in claim **27**, wherein said body is constructed of a material selected from a group of materials including plastic, glass, metal, wood and electroplated elements with wide dimensional tolerance.

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